

WHAT IS CLAIMED IS:

1. An ink tank capable of introducing ink into the ink tank through an inlet by a negative pressure introduced into the ink tank through a suction port, comprising:  
gas-liquid separating means which is provided at the suction port and which permits gas to pass but inhibits ink from passing.
2. An ink tank as claimed in Claim 1, wherein the gas-liquid separating means is a gas-permeable membrane made of a material selected from a tetrafluoride ethylene resin and other porous resin materials.
3. An ink tank as claimed in Claim 1, wherein the gas-liquid separating means is a gas-permeable membrane made of a material selected from porcelain, unglazed pottery, ceramic, and other porous materials.
4. An ink tank as claimed in Claim 1, further comprising:  
an ink absorber which is provided in the ink tank and which is capable of retaining ink by absorption.
5. An ink tank as claimed in Claim 4, wherein a space is provided between the gas-liquid separating means and the ink absorber.

6. An ink tank as claimed in Claim 5, wherein  
the space is provided an opening portion that opens  
toward the outside of the ink tank and an opening portion  
5 that opens toward the inner side of the ink tank, and  
areas of the respective opening portions are  
different from each other.

Fig. 11 7. An ink tank as claimed in Claim 6, wherein  
10 an inner wall surface that defines the space is  
provided as a tapered surface.

8. An ink tank as claimed in Claim 6, wherein  
an inner wall surface that defines the space is  
15 provided as a curved surface.

9. An ink tank as claimed in Claim 5, wherein  
the gas-liquid separating means is placed on an inner  
wall surface that defines the space.

20 10. An ink tank as claimed in Claim 5, wherein  
an inner wall surface that defines the space is  
subjected to a surface treatment.

25 11. An ink tank as claimed in Claim 1, wherein  
the surface treatment is a water-repellent  
treatment.

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12. An ink tank as claimed in Claim 1, further comprising:

5 a supply port for supplying ink stored in the ink tank to the outside.

13. An ink tank as claimed in Claim 1, further comprising:

10 an ink absorber which is provided in the ink tank and which is capable of retaining ink by absorption, wherein the ink introduced through the inlet is absorbed in the ink absorber and the ink being absorbed reaches the supply port before reaching the gas-liquid separating means.

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14. An ink tank as claimed in Claim 13, wherein

the distance between the inlet and the supply port is shorter than the distance between the inlet and the gas-liquid separating means.

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15. An ink tank as claimed in Claim 12, wherein

the supply port is connectable to an ink-jet printing head which is able to eject ink.

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16. An ink tank as claimed in Claim 1, wherein

a plurality of the ink tanks are combined each other as an ink tank assembly.

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17. An ink tank as claimed in Claim 16, wherein  
the respective suction ports of the plurality of the  
ink tanks are communicated with a common suction port that  
5 is common to the plurality of the ink tanks.

18. An ink tank as claimed in Claim 16, wherein  
the respective gas-liquid separating means of the  
plurality of the ink tanks have different properties.  
10

19. An ink tank as claimed in Claim 16, wherein  
the respective gas-liquid separating means of the  
plurality of the ink tanks have different shapes.

20. An ink tank as claimed in Claim 17, wherein  
the respective gas-liquid separating means of the  
plurality of the ink tanks vary degree of negative pressure  
to be introduced into the plurality of the ink tanks, by  
the ink tank.  
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21. An ink tank as claimed in Claim 20, wherein  
the respective gas-liquid separating means of the  
plurality of the ink tanks are porous bodies having a  
different pore diameter.  
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22. An ink tank as claimed in Claim 20, wherein  
the respective gas-liquid separating means of the  
25

plurality of the ink tanks are porous bodies having a different thickness.

23. An ink tank as claimed in Claim 17, wherein  
5 the respective suction ports of the plurality of the ink tanks have different opening area, so that degree of negative pressure to be introduced into the plurality of the ink tanks is varied, by the ink tank.

10 24. An ink tank as claimed in Claim 23, wherein the opening area of the suction port of the respective ink tank is variable.

15 25. An ink tank as claimed in Claim 16, wherein the plurality of the ink tanks include at least two different types of ink.

20 26. An ink tank as claimed in Claim 25, wherein the gas-liquid separating means of the plurality of the ink tanks increase the negative pressure to be introduced into the ink tank though the suction port according to increase of a flow resistance of ink to be stored.

25 27. An ink tank as claimed in Claim 16, wherein the plurality of the ink tanks have different capacity of ink.

28. An ink tank as claimed in Claim 27, wherein  
the gas-liquid separating means of the plurality of  
the ink tanks increase the negative pressure to be  
5 introduced into the ink tank though the suction port  
according to increase of the capacity of ink.

29. An ink tank as claimed in Claim 17, further  
comprising:  
10 a joint portion which is provided at the common  
suction port and which is connectable to a suction passage.

30. An ink-jet cartridge comprising:  
an ink tank as claimed in Claim 1; and  
15 an ink-jet printing head which is able to eject ink  
introduced from the ink tank.

31. An ink-jet cartridge as claimed Claim 30, wherein  
the ink-jet printing head is provided with  
20 electrothermal-converting elements that generate thermal  
energies as energies of ejecting ink.

32. An ink-supplying device for supplying ink to an  
ink tank as claimed in claim 1 or an ink tank of an ink-jet  
25 cartridge as claimed in Claim 30, comprising:

ink-supplying means for supplying ink stored in a  
main ink tank into the ink tank through the inlet; and

negative-pressure loading means for loading negative pressure caused by a suction pump into the ink tank through the suction port.

5        33. An ink-supplying device as claimed in Claim 32, further comprising:

        a joint portion for releasably connecting between the ink-supplying means and the inlet of the ink tank; and

        a joint member for releasably connecting between the  
10        ink-supplying means and the suction port of the ink tank.

        34. An ink-supplying device for supplying ink to an ink tank as claimed in claim 15 or an ink tank of an ink-jet cartridge as claimed in Claim 30, comprising:

15        ink-supplying means for supplying ink stored in a main ink tank into the ink tank through the inlet;

        negative-pressure loading means for loading negative pressure caused by a suction pump into the ink tank through the suction port; and

20        capping means capable of capping an ink eject port of the printing head by a cap member.

        35. An ink-supplying device as claimed in Claim 34, wherein

25        the cap member is able to close the ink eject port when the ink tank is supplied ink.

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36. An ink-supplying device as claimed in Claim 34,  
further comprising:

negative-pressure loading means for the recovery  
process which load negative pressure caused by a suction  
5 pump into the cap member so that discharge ink from the  
ink eject port by suction.

37. An ink-supplying device as claimed in Claim 36,  
wherein

10 the suction pump of the negative-pressure loading  
means also functions as the suction pump of the  
negative-pressure loading means for the recovery process.

38. An ink-supplying device as claimed in Claim 34,  
15 further comprising:

detecting means for detecting the presence or absence  
of ink in the printing head.

39. An ink-jet printing apparatus, comprising:

20 a mounting portion on which an ink tank as claimed in  
Claim 1 and an ink-jet printing head are mountable, where  
the ink-jet printing is able to eject ink supplied from  
the ink tank; and

transfer means which performs the relative movements  
25 of the ink-jet printing head and a printing medium.

40. An ink-jet printing apparatus as claimed in Claim



39, wherein

the ink-jet printing head is provided with electrothermal-converting elements that generate thermal energies as energies of ejecting ink.

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41. An ink-jet printing apparatus, comprising:  
a mounting portion on which an ink-jet cartridge as claimed in Claim 30; and

transfer means for relatively moving the ink-jet  
10 cartridge and a printing medium.

42. An ink-jet printing apparatus as claimed in Claim  
39, further comprising:

an ink-supplying device as claimed in Claim 32.

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43. An ink-jet printing apparatus as claimed in Claim  
39, further comprising:

an ink-supplying device as claimed in Claim 34.

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44. An ink-jet printing apparatus as claimed in Claim  
42, further comprising:

means for forming ink meniscus on the ink eject port  
by the recovery process which discharges ink from the ink  
eject port of the ink-jet printing head under suction  
25 before supplying of ink to the ink tank.

45. An ink-jet printing apparatus as claimed in Claim

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43, further comprising:

means for forming ink meniscus on the ink eject port  
by the recovery process which discharges ink from the ink  
eject port of the ink-jet printing head under suction  
5 before supplying of ink to the ink tank.

46. An ink-jet printing apparatus as claimed in Claim  
42, wherein

ink in the ink tank is moved away from the gas-liquid  
10 separating means by a recovery process which discharges  
ink from the ink eject port of the printing head under  
suction after supplying ink to the ink tank.

47. An ink-jet printing apparatus as claimed in Claim  
15 43, wherein

ink in the ink tank is moved away from the gas-liquid  
separating means by a recovery process which discharges  
ink from the ink eject port of the printing head under  
suction after supplying ink to the ink tank.

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48. An ink-jet printing apparatus as claimed in Claim  
42, wherein

ink in the ink tank is moved away from the gas-liquid  
separating means by ejecting ink which is not responsible  
25 for an image formation from the ink eject port of the  
printing head after the supply ink to the ink tank.

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49. An ink-jet printing apparatus as claimed in Claim 43, wherein

ink in the ink tank is moved away from the gas-liquid separating means by ejecting ink which is not responsible for an image formation from the ink eject port of the printing head after the supply ink to the ink tank.

50. An ink-jet printing apparatus as claimed in Claim 42, further comprising:

negative-pressure controlling means for applying negative pressure from the outside to the ink eject port of the ink-jet printing head in addition to introduce negative pressure into the ink tank through the suction port at the time of supplying ink to the ink tank.

51. An ink-jet printing apparatus as claimed in Claim 43, further comprising:

negative-pressure controlling means for applying negative pressure from the outside to the ink eject port of the ink-jet printing head in addition to introduce negative pressure into the ink tank through the suction port at the time of supplying ink to the ink tank.

52. An ink-jet printing apparatus as claimed in Claim 50, wherein

the negative pressure to be applied on the ink eject port of the printing head is not enough to suck ink from

the ink eject port.

53. An ink-jet printing apparatus as claimed in Claim 51, wherein

5 the negative pressure to be applied on the ink eject port of the printing head is not enough to suck ink from the ink eject port.

54. An ink-jet printing apparatus as claimed in Claim 10 50, wherein

the negative pressure to be applied on the ink eject port of the printing head, when the ink touches the gas-liquid separating means, is not enough to suck ink from the ink eject port.

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55. An ink-jet printing apparatus as claimed in Claim 51, wherein

the negative pressure to be applied on the ink eject port of the printing head, when the ink touches the 20 gas-liquid separating means, is not enough to suck ink from the ink eject port.

56. An ink-jet printing apparatus as claimed in Claim 50, wherein

25 the negative pressure to be applied on the ink eject port of the printing head, when the ink touches the gas-liquid separating means, is able to suck ink from the

ink eject port.

57. An ink-jet printing apparatus as claimed in Claim 51, wherein

5 the negative pressure to be applied on the ink eject port of the printing head, when the ink touches the gas-liquid separating means, is able to suck ink from the ink eject port.

10 58. A method for supplying ink to an ink tank as claimed in Claim 1 and an ink tank of an ink cartridge as claimed in Claim 30, comprising the steps of:

supplying ink into the ink tank from the inlet by loading negative pressure into the ink tank from the  
15 suction port through the gas-liquid separating means; and  
stopping the load of negative pressure into the ink tank from the suction port.

59. A method for supplying ink as claimed in claim 20 58, wherein

with respect to a plurality of the ink tanks, loading negative pressure into the ink tank from the suction port through the gas-liquid separating means, so that the supply of ink is concurrently performed on the plurality of the  
25 ink tanks.

60. An ink-jet printing apparatus, comprising:

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a mounting portion on which an ink tank as claimed in Claim 1 and an ink-jet printing head are mountable, where the ink-jet printing is able to eject ink supplied from the ink tank;

5 transfer means which performs the relative movements of the ink-jet printing head and a printing medium: and

means for forming ink meniscus on the ink eject port by the recovery process which discharges ink from the ink eject port of the ink-jet printing head under suction  
10 before supplying of ink to the ink tank.

61. An ink tank as claimed in Claim 1, wherein the gas-liquid separating means is provided with a member made of a porous material with an oil repellent  
15 finish.

62. An ink tank as claimed in Claim 61, wherein the gas-liquid separating means is an gas-permeable membrane made of a material selected from a tetrafluoride  
20 ethylene resin, a polyolefin resin, and other porous resin materials, which is subjected to an oil-repellent finish.

63. An ink tank as claimed in Claim 61, wherein the gas-liquid separating means is an gas-permeable  
25 membrane made of a material selected from porcelain, unglazed pottery, ceramic, and other porous materials, which is subjected to an oil-repellent finish.

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5 64. An ink-jet printing apparatus for printing an image on a printing medium employing an ink-jet printing head capable of ejecting ink supplied from an ink tank, comprising:

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negative-pressure loading means which is able to introduce negative pressure into the ink tank;

ink-supplying means for supplying ink into the ink tank using the negative pressure in the ink tank;

10 gas-liquid separating means which lies in a negative-pressure loading passage between the ink tank and the negative-pressure loading means and which permits gas to pass but inhibits ink from passing; and

15 disrupting means capable of disrupting a midcourse portion of the negative-pressure loading passage between the ink tank and the gas-liquid separating means.

65. An ink-jet printing apparatus as claimed in Claim 64, wherein

20 the disrupting means disrupts the midcourse portion of the negative-pressure loading passage at the time of supplying ink to the ink tank.

25 66. An ink-jet printing apparatus as claimed in Claim 64, wherein

Sub C1  
the disrupting means has a connecting portion which connects the midcourse portion releasable.

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Cont  
Sub C1

67. An ink-jet printing apparatus as claimed in Claim 64, further comprising:

moving means for moving the ink tank, wherein  
5 the disrupting means connects the midcourse portion of the negative-pressure loading passage when the ink tank is moved to a predetermined ink-supplying position, and  
disrupts the midcourse portion of the negative-pressure loading passage when the ink tank is moved away from the  
10 predetermined ink-supplying position.

68. An ink-jet printing apparatus as claimed in Claim 67, wherein

the moving means moves the ink-jet printing head  
15 together with the ink tank.

69. An ink-jet printing apparatus as claimed in Claim 64, wherein

the gas-liquid separating means is moved between the  
20 position for communicating with the inside of the ink tank and the position for never communicating with the inside of the ink tank.

70. An ink-jet printing apparatus as claimed in Claim 64, further comprising:

wiping means for wiping the gas-liquid separating means.



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71. An ink-jet printing apparatus as claimed in Claim 64, wherein

the gas-liquid separating means is an gas-permeable membrane made of a material selected from a tetrafluoride ethylene resin and other porous resin materials.

Cont  
Sub C1

72. An ink-jet printing apparatus as claimed in Claim 64, wherein

the ink-jet printing head is provided with electrothermal-converting elements that generate thermal energies as energies of eject ink.

73. An ink-supplying device, comprising:  
negative-pressure loading means which is able to introduce negative pressure into an ink tank;  
ink-supplying means for supplying ink into the ink tank using the negative pressure in the ink tank;  
gas-liquid separating means which lies in a negative-pressure loading passage between the ink tank and the negative-pressure loading means and which permits gas to pass but inhibits ink from passing; and  
disrupting means capable of disrupting a midcourse portion of the negative-pressure loading passage between the ink tank and the gas-liquid separating means.

74. An ink-supplying device as claimed in Claim 73,

wherein

the disrupting means disrupts the midcourse portion of the negative-pressure loading passage at the time of supplying ink to the ink tank.

5

75. An ink-supplying device as claimed in Claim 73, wherein

the disrupting means has a connecting portion which connects the midcourse portion releasably.

10

76. A method for supplying ink to an ink tank, comprising:

gas-liquid separating means which lies in a negative-pressure loading passage between the ink tank and the negative-pressure loading means and which permits gas to pass but inhibits ink from passing; and

disrupting means for disrupting a midcourse portion of the negative-pressure loading passage between the ink tank and the gas-liquid separating means; comprising the steps of:

20

loading negative pressure into the ink tank through the negative-pressure loading passage;

supplying ink into the ink tank using negative pressure in the ink tank;

25

stopping the loading of negative pressure into the ink tank by the gas-liquid separating means when ink touches the gas-liquid separating means; and

disrupting the midcourse portion by the disrupting means except when ink is supplied into the ink tank.

77. An ink-jet printing apparatus as claimed in Claim 5 64, wherein

the gas-liquid separating means is provided with a member made of a porous material with an oil repellent finish.

78. An ink-jet printing apparatus as claimed in Claim 77, wherein

the gas-liquid separating means is an gas-permeable membrane made of a material selected from a tetrafluoride ethylene resin, a polyolefin resin, and other porous resin materials, which is subjected to an oil-repellent finish.

79. An ink-jet printing apparatus as claimed in Claim 77, wherein

the gas-liquid separating means is an gas-permeable membrane made of a material selected from porcelain, unglazed pottery, ceramic, and other porous materials, which is subjected to an oil-repellent finish.

80. An ink-supplying device as claimed in Claim 73, 25 wherein

the gas-liquid separating means is provided with a member made of a porous material with an oil repellent

finish.

81. An ink-supplying device as claimed in Claim 80,  
wherein

5 the gas-liquid separating means is an gas-permeable  
membrane made of a material selected from a tetrafluoride  
ethylene resin, a polyolefin resin, and other porous resin  
materials, which is subjected to an oil-repellent finish.

10 82. An ink-supplying device as claimed in Claim 80,  
wherein

the gas-liquid separating means is an gas-permeable  
membrane made of a material selected from porcelain,  
unglazed pottery, ceramic, and other porous materials,  
15 which is subjected to an oil-repellent finish.

83. A method for supplying ink as claimed in Claim  
76, wherein

20 the gas-liquid separating means is provided with a  
member made of a porous material with an oil repellent  
finish.

84. A method for supplying ink as claimed in Claim  
83, wherein

25 the gas-liquid separating means is an gas-permeable  
membrane made of a material selected from a tetrafluoride  
ethylene resin, a polyolefin resin, and other porous resin

materials, which is subjected to an oil-repellent finish.

85. A method for supplying ink as claimed in Claim 83, wherein

5 the gas-liquid separating means is an gas-permeable membrane made of a material selected from porcelain, unglazed pottery, ceramic, and other porous materials, which is subjected to an oil-repellent finish.

10 86. An ink tank which has an ink-supplying port for supplying ink into an ink-jet printing head, and which is capable of introducing ink into the ink tank by negative pressure introduced into the ink tank, comprising:

15 a valve provided at the ink-supplying port, which closes the ink-supplying port by negative pressure higher than a predetermined level in the ink tank.

20 87. An ink tank as claimed in Claim 86, wherein the valve permits ink to pass from the ink tank to the ink-jet printing head.

25 88. An ink tank as claimed in Claim 86, wherein the valve inhibits ink from the ink-jet printing head to the ink tank.

89. An ink tank as claimed in Claim 86, wherein a gas-liquid separating means which permits gas to

pass but inhibits ink from passing and which is provided at a suction port for introducing negative pressure into the ink tank.

5 90. An ink tank as claimed in Claim 86, wherein the ink-supplying port is provided with a filter.

91. An ink tank as claimed in Claim 90, wherein the filter and a valve body of the valve are assembled  
10 together.

92. An ink tank as claimed in Claim 86, wherein a valve body of the valve is a sheet-shaped elastic material.  
15

93. An ink tank as claimed in Claim 86, wherein a valve body of the valve is made of a material selected from the group consisting of: polyethylene, polyvinylidene fluoride, polyvinylidene, polyethylene vinyl alcohol,  
20 polyethylene terephthalate, and mixtures thereof.

94. An ink-jet printing head capable of ejecting ink supplied from an ink tank through an ink-supplying port, comprising:

25 a valve provided at a connecting port connected to the ink-supplying port, which closes the ink-supplying port by negative pressure higher than a predetermined level in

the ink tank.

95. An ink-jet printing head as claimed in Claim 94,  
wherein

5 the valve permits ink to pass from the ink tank to the  
ink-jet printing head.

96. An ink-jet printing head as claimed in Claim 94,  
wherein

10 the valve inhibits ink from the ink-jet printing head  
to the ink tank.

97. An ink-jet printing head as claimed in Claim 94,  
wherein

15 the connecting port is provided with a filter.

98. An ink-jet printing head as claimed in Claim 97,  
wherein

20 the filter and a valve body of the valve are assembled  
together.

99. An ink-jet printing head as claimed in Claim 94,  
wherein

25 a valve body of the valve is a sheet-shaped elastic  
material.

100. An ink-jet printing head as claimed in Claim 94,

wherein

a valve body of the valve is made of a material selected from the group consisting of: polyethylene, polyvinylidene fluoride, polyvinylidene, polyethylene vinyl alcohol,  
5 polyethylene terephthalate, and mixtures thereof.

101. An ink-jet printing head as claimed in Claim 94, comprising:

an electrothermal-converting elements which generate  
10 thermal energies as energies of eject ink.

102. An ink-jet cartridge comprising:

an ink tank as claimed in Claim 86; and  
an ink-jet printing head capable of ejecting ink  
15 supplied from an ink tank through an ink-supplying port.

103. An ink-jet cartridge comprising:

an ink-jet printing head as claimed in Claim 94; and  
an ink tank capable of supplying ink into the ink-  
20 jet printing head through the connecting port.

104. An ink-jet printing apparatus comprising:

a tank mounting portion on which an ink tank as  
claimed in Claim 86 is mountable;

25 a head mounting portion on which an ink-jet printing head capable of ejecting ink supplied from the ink tank is mountable; and



moving means for relatively moving the ink-jet printing head and a printing medium.

105. An ink-jet printing apparatus comprising:  
5 a head mounting portion on which an ink-jet printing head as claimed in Claim 94 is mountable;  
a tank mounting portion on which an ink tank capable of supplying ink to the ink-jet printing head is mountable;  
moving means for relatively moving the ink-jet  
10 printing head and a printing medium.

106. An ink-jet printing apparatus as claimed in Claim 104 or 105, wherein  
the moving means moves the ink-jet printing head  
15 together with the ink tank relatively with respect to the printing medium.

107. An ink-jet printing apparatus as claimed in Claim 104 or 105, further comprising:  
20 negative-pressure loading means which is able to introduce negative pressure into the ink tank; and  
ink loading means for loading ink into the ink tank using negative pressure in the ink tank.

25 108. An ink-jet printing apparatus as claimed in Claim 104 or 105, further comprising:  
a joint for releasably connecting between the

negative-pressure loading means and the ink tank, and for releasably connecting between the ink loading means and the ink tank.

5        109. An ink tank as claimed in Claim 89, wherein the gas-liquid separating means is provided with a member made of a porous material with an oil repellent finish.

10        110. An ink tank as claimed in Claim 109, wherein the gas-liquid separating means is an gas-permeable membrane made of a material selected from a tetrafluoride ethylene resin, a polyolefin resin, and other porous resin materials, which is subjected to an oil-repellent finish.

15        111. An ink tank as claimed in Claim 109, wherein the gas-liquid separating means is an gas-permeable membrane made of a material selected from porcelain, unglazed pottery, ceramic, and other porous materials, 20 which is subjected to an oil-repellent finish.

112. An ink tank having a bag-like tank body which is made of a sheet of a thin film that is folded down in one side to form a folding part, and which is capable of 25 storing ink, wherein

the folding part forms a connecting portion capable of connecting between the inside and the outside of the

tank body by means of a hollow conduit that is able to penetrate the folding part.

113. An ink tank as claimed in Claim 112, wherein  
5 outer edge portions of the sheet except the folding part are bound by heat to form the tank body.

114. An ink tank as claimed in Claim 112, wherein  
10 the sheet is shaped as a flat rectangle and is folded down in two to form the folding part, and outer edge portions of the sheet other than the folding part are thermally fused to form the tank body.

115. An ink tank as claimed in Claim 112, wherein  
15 a seal member which is capable of sealing between an outer peripheral portion of the hollow conduit and the connecting part.

116. An ink tank as claimed in Claim 112, further  
20 comprising:

a tank case for containing the tank body, wherein the tank case has an opening for exposing the connecting portion outward.

117. An ink tank as claimed in Claim 116, wherein  
25 the tank case has a positioning portion for positioning at least one part of an outer peripheral

portion of the tank body.

118. An ink tank as claimed in Claim 116, wherein  
the tank case is constructed as a combination of a  
5 first case and a second case, which are substantially  
symmetrical with each other.

119. An ink tank as claimed in Claim 118, wherein  
the tank body has at least one positioning hole, while  
10 a positioning protrusion to be engaged in the positioning  
hole is formed on at least one of the first case and the  
second case.

120. An ink tank as claimed in Claim 118, wherein  
15 the opening is formed on a joint portion between the  
first case and the second case.

121. An ink tank as claimed in Claim 116, wherein  
a neighboring area of the tank case with respect to  
20 the opening and a neighboring area of the tank body with  
respect to the connecting portion are bonded by an adhesive  
agent.

122. A printing apparatus capable of printing of an  
25 image using ink in the tank body, comprising:  
a tank mounting portion on which an ink tank as claimed  
in Claim 112 is mountable, wherein

a hollow conduit that is able to penetrate the connecting portion of the tank body and is provided at the tank mounting portion.

5        123. A printing apparatus as claimed in Claim 122, wherein

the hollow conduit has a tip portion in the shape of a needle.

10        124. A printing apparatus as claimed in Claim 122, further comprising:

a head mounting portion on which an ink-jet printing head capable of ejecting ink is mountable; and

15        an ink-supplying passage that supplies ink to the ink-jet printing head from the ink tank through the hollow conduit.

125. A printing apparatus as claimed in Claim 124, wherein

20        the printing head is provided with electrothermal-converting elements that generate thermal energies as energies of discharging ink.